

5 **WHAT IS CLAIMED IS:**

1. An autofocus module for a microscope-based system, comprising:
 - an objective that defines an image beam path which is perpendicular to a surface of a specimen
 - 10 - an illumination beam path that encompasses a light source for illumination of the specimen,
 - a light source for generating a measurement light bundle for determining a focus position;
 - an optical means for splitting the measurement light bundle in such a way that an eccentrically extending measurement light beam bundle is created;
 - 15 - a first dichroic beam splitter is provided in the image beam path of the microscope-based system, which couples the measurement light beam bundle eccentrically into the microscope-based system and directs it onto the surface of the specimen;
 - 20 - the optical means directs onto a detector element a measurement light beam bundle remitted from the microscope-based system; and
 - a cylindrical lens between the detector element and the optical means.
- 25 2. The autofocus module as defined in Claim 1, wherein the optical means is embodied as a prism that has one fully mirror-coated prism surface and one prism surface for total reflection, the mirror-coated prism surface generating, from the measured light bundle, an eccentrically extending measurement light beam bundle.
- 30 3. The autofocus module as defined in Claim 1, wherein the detector element is a two-dimensional area sensor.
4. The autofocus module as defined in Claim 1, wherein the detector element
35 comprises at least two linear sensors arranged parallel to one another.

- 5 5. The autofocus module as defined in Claim 1, wherein displacement means
are provided which incline the detector element with respect to a plane
defined by the surface of the specimen.
- 10 6. The autofocus module as defined in Claim 1, wherein a displacement means
is provided which inclines the detector element exclusively about an axis
that is parallel to the X axis of a Cartesian coordinate system.
- 15 7. The autofocus module as defined in Claim 1, wherein the light source, the
detector element, the optical means, the cylindrical lens, the stationary lens
and a displaceable lens, a second dichroic beam splitter, and the
displacement means are arranged in a housing
- 20 8. The autofocus module as defined in Claim 7, wherein the lens is
displaceable in manual or motorized fashion in the direction of a dashed
double arrow.
- 25 9. The autofocus module as defined in Claim 7, wherein housing can be
attached to the microscope-based system.
- 30 10. The autofocus module as defined in Claim 1, wherein the light source is a
laser light source.
11. The autofocus module as defined in Claim 10, wherein the laser light source
emits IR light as the measurement light.
12. The autofocus module as defined in Claim 1, wherein the microscope-based
system and the autofocus module are connected to a computer.